

Claims

1. A component defining one of a blade and a vane for a rotary machine having a rotor (2), which is rotatable about a rotary axis (x), the component comprising
5 an inner space (10), which is limited by first wall (11) and a second wall (12) facing each other and which has an inlet (17) and an outlet (18), wherein the inner space (10) forms a passage for a cooling fluid from the inlet (17) to the
10 outlet (18),
at least first ribs (21), projecting from the first wall (11) and extending substantially in parallel to each other to form first channels (23) for the fluid from a leading end of the first ribs (21) to a trailing end of the first ribs
15 (21), and
second ribs (22), projecting from the second wall (12) and forming second channels (24) for the fluid from the leading end of the second ribs (22) to the trailing end of the second ribs (22),
20 wherein the first ribs (21) and the second ribs (22) intersect each other and are directly connected to each other at said intersections, characterised in that the first and second ribs (21, 22) intersect at an intersection joint (26) in the proximity of the trailing end in such a way that
25 the first channel (23) and the second channel (22) form a common outlet channel (27) with a flow area.
2. A component according to claim 1, characterised in that each such common outlet channel includes means for providing
30 a reduction of the flow area in the proximity trailing end.
3. A component according to claim 2, characterised in that the first and second ribs (21, 22) have a main thickness (b) along their extension, wherein the first and second ribs
35 (21, 22) at the intersection joint (26) have a thickness

being larger than the main thickness, thereby providing said reduction of the flow area of the common channels (27).

4. A component according to any one of the preceding 5 claims, characterised in that each of the common outlet channels has a height (H) measured from the first wall (11) to the second wall (12), wherein each of the first channel (23) and second channel (24) has a height (h) extending from the first wall (11) and second walls (12), respectively, to 10 the second ribs (22) and first ribs (21), respectively.

5. A component according to any one of the preceding claims, characterised in that the first ribs (21) extends in parallel to each other and that the second ribs (22) extends 15 in parallel to each other.

6. A component according to claim 5, characterised in that the first ribs (21) extend from the leading end to the trailing end along a first direction in the proximity of the 20 leading end and along a second direction in the proximity of the trailing end, wherein the first direction is inclined in relation to the second direction and wherein the component is adapted to be mounted to the rotor (2) in such a way that the first direction forms a first angle (α) of inclination 25 to the rotary axis (x).

7. A component according to claim 6, characterised in that the first ribs (21) extend from the leading end to the trailing end along a substantially continuously curved path.

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35 8. A component according to any one of claims 6 and 7, characterised in that the second ribs (22) extend from the leading end to the trailing along a third direction in the proximity of the leading end and along a fourth direction in the proximity of the trailing end, wherein the third direction is inclined in relation to the fourth direction

and wherein the component is adapted to be mounted to the rotor (2) in such a way that the third direction forms a third angle (β) of inclination to the rotary axis (x).

5 9. A component according to claim 8, characterised in that the second ribs (22) extend from the leading end to the trailing end along a substantially continuously curved path.

10 10. A component according to any one of claims 8 and 9, characterised in that the second direction is substantially parallel the fourth direction.

15 11. A component according to any one of claims 8 to 10, characterised in that the second direction and the fourth direction are substantially parallel to the rotary axis (x).

12. A component according to any one of claims 8 to 11, characterised in that the first direction intersects with the third direction.

20 13. A component according to any one of claims 8 to 12, characterised in that the component is adapted to be mounted to the rotor (2) in such a way that the third direction slopes from the leading end towards the rotary axis (x).

25 14. A component according to any one of claims 6 to 13, characterised in that the component is adapted to be mounted to the rotor (2) in such a way that the first direction slopes from the leading end away from the rotary axis (x).

30 15. A component according to any one of the preceding claims, characterised in that the component is adapted to be mounted to the rotor (2) in such a way that the first ribs (21) are provided on a pressure side of the component and that the second ribs (22) are provided on a suction side of the component.

16. A component according to any one of the preceding claims, characterised in that the first and second ribs (21, 22) extend over a leading zone (35) extending from the 5 leading end and a trailing zone (36) extending from the trailing end.

17. A component according to claim 16, characterised in that the component includes additional first ribs (21') 10 projecting from the first wall (11) and extending substantially in parallel to each other over the trailing zone (36) to the trailing end, wherein the additional first ribs (21') extend in parallel with the first ribs (21) in such a way that substantially every additional first rib 15 (21') is provided between two respective adjacent first ribs (21), thereby dividing substantially every one of the first channels (23) into two parallel part channels (23') extending over the trailing zone (36).

20 18. A component according to claim 17, characterised in that the component includes additional second ribs (22') 25 projecting from the second wall (12) and extending substantially in parallel to each other over the trailing zone (36) to the trailing end, wherein the additional second ribs (22') extend in parallel with the second ribs (22) in such a way that substantially every additional second rib (22') is provided between two respective adjacent second ribs, thereby dividing substantially every one of the second channels (24) into two parallel part channels (24') 30 extending over the trailing zone (36).

19. A component according to claim 18, characterised in that the additional first and second ribs (21', 22') 35 intersect at an intersection joint (26') in the proximity of the trailing end in such a way that each of the part channels (23') from the first channels (23) together with

one of the part channels (24') from the second channels (24) form a common outlet channel (27') with a flow area.

20. A component according to claim 19, characterised in 5 that the additional first and second ribs (21', 22') have a main thickness along their extension, wherein the additional first and second ribs (21', 22') at the intersection joint (26') have a thickness being larger than the main thickness, thereby providing a reduction of the flow area of the common 10 channels (27').

21. A component according to any one of the preceding claims, characterised in that the inner space (x) extends along a centre axis (y) of the component from a bottom 15 portion (16) adjacent the inlet (17) to an opposite top portion (15).

22. A component according to any one of the preceding claims, characterised in that the inner space (10) 20 downstream the inlet (17) and upstream the leading end of the ribs includes a distribution chamber (19) adapted to distribute the cooling fluid from the inlet (17) to substantially all of the channels.

25 23. A component according to claims 21 and 22, characterised in that the distribution chamber (10) extends from the bottom portion (16) to the top portion (15).